Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (currently amended) A method of controlling optical signal during transmission, comprising the steps of:

transmitting a wave division multiplexed optical signal having a predetermined set of ranges of wavelengths;

amplifying the wave division multiplexed optical signal to generate an amplified wave division multiplexed optical signal;

monitoring an average value of a total optical strength level of at least one of the ranges of the amplified wave division multiplexed optical signal;

monitoring a probe optical strength level of at least one of the wavelengths of the amplified wave division multiplexed optical signal; and

adjusting said amplification based upon the average value of the total optical strength level and the probe optical strength level so as to substantially reduce a gain tilt and an optical signal-to-noise ratio in the amplified wave division multiplexed optical signal.

2. (original) The method of controlling optical signal during transmission according to claim 1 wherein said adjusting further comprising the steps of:

comparing the probe optical strength level to a predetermined gain tilt value to generate a first comparison result; and

controlling said amplifying step based upon the first comparison result.

3. (original) The method of controlling optical signal during transmission according to claim 1 wherein the predetermined gain tilt value is retrieved from a storage table.

4. (original) The method of controlling optical signal during transmission according to claim 1 wherein said adjusting further comprising the steps of:

comparing the total optical strength level to a predetermined output level value to generate a second comparison result; and

controlling said amplifying step based upon the second comparison result.

5. (original) The method of controlling optical signal during transmission according to claim 1 wherein the predetermined output level value is retrieved from a storage table.

6. (original) The method of controlling optical signal during transmission according to claim 1 further comprising additional steps of:

monitoring an input total optical strength level of at least one of the ranges of the wave division multiplexed optical signal; and

monitoring an input probe optical strength level of at least one of the wavelengths of the wave division multiplexed optical signal.

7. (original) The method of controlling optical signal during transmission according to claim 6 further comprising additional steps of:

transmitting the amplified wave division multiplexed optical signal to a receiving unit via an optical fiber of a predetermined length;

monitoring a transmitted total optical strength level of at least one of the ranges of the amplified wave division multiplexed optical signal at the receiving unit after said transmitting step; and

monitoring a transmitted probe optical strength level of at least one of the wavelengths of the amplified wave division multiplexed optical signal at the receiving unit after transmitting step.

8. (original) The method of controlling optical signal during transmission according to claim 7 wherein a sum of the input total optical strength level at a transmission unit before transmission

and the transmitted prove optical strength level at a receiving unit after the transmission is identical.

9. (original) The method of controlling optical signal during transmission according to claim 7 wherein a sum of the input probe optical strength level at a transmission unit before transmission and the transmitted probe optical strength level at a receiving unit after the transmission is identical.

10. (original) The method of controlling optical signal during transmission according to claim 1 further comprising additional steps of:

transmitting the amplified wave division multiplexed optical signal to a receiving unit via an optical fiber of a predetermined length;

monitoring a transmitted total optical strength level of at least one of the ranges of the amplified wave division multiplexed optical signal at the receiving unit after said transmitting step; and

monitoring a transmitted probe optical strength level of at least one of the wavelengths of the amplified wave division multiplexed optical signal at the receiving unit after transmitting step.

11. (original) The method of controlling optical signal during transmission according to claim 10 wherein said amplifying step is adjusted based upon the total optical strength level, the probe optical strength level, the transmitted total optical strength level and the transmitted probe optical strength level.

12. (original) The method of controlling optical signal during transmission according to claim 1 wherein said amplifying step is adjusted with respect to an output level of the amplified wave division multiplexed optical signal.

13. (original) The method of controlling optical signal during transmission according to claim 1 wherein said amplifying step is adjusted with respect to a gain tilt of the amplified wave division multiplexed optical signal.

14. (currently amended) A system for controlling optical signal during transmission, comprising:

a first and second optical fibers for transmitting a wave division multiplexed optical signal having a predetermined set of ranges of wavelengths;

an amplifier connected to said first optical fiber for amplifying the wave division multiplexed optical signal according to a predetermined amplification characteristic to generate an amplified wave division multiplexed optical signal, said amplifier outputting the amplified wave division multiplexed optical signal to said second optical fiber;

a first monitor connected to said second optical fiber for monitoring an average value of a total optical strength level of at least one of the ranges of the amplified wave division multiplexed optical signal;

a second monitor connected to said second optical fiber for monitoring a probe optical strength level of at least one of the wavelengths of the amplified wave division multiplexed optical signal; and

an adjustment unit connected to said amplifier, said first monitor and said second monitor for adjusting the amplification characteristic based upon the average value of the total optical strength level and the probe optical strength level so as to substantially reduce a gain tilt and an optical signal-to-noise ratio in the amplified wave division multiplexed optical signal.

15. (original) The system for controlling optical signal during transmission according to claim 14 wherein said adjusting unit further comprising:

a first comparator for comparing the probe optical strength level to a predetermined gain tilt value to generate a first comparison result; and

a first controlling unit connected to said amplifier and said first comparator for controlling the amplification characteristic based upon the first comparison result.

16. (original) The system for controlling optical signal during transmission according to claim 15 further comprising a first storage unit connected to said first comparator for storing the predetermined gain tilt value.

17. (original) The system for controlling optical signal during transmission according to claim 14 wherein said adjusting unit further comprising:

a second comparator for comparing the total optical strength level to a predetermined output level value to generate a second comparison result; and

a second controlling unit connected to said amplifier and said second comparator for controlling said amplification characteristic based upon the second comparison result.

18. (original) The system for controlling optical signal during transmission according to claim 17 further comprising a second storage unit connected to said second comparator for storing the predetermined output level value.

19. (original) The system for controlling optical signal during transmission according to claim 14 further comprising:

a third monitor connected to said first optical fiber for monitoring an input total optical strength level of at least one of the ranges of the wave division multiplexed optical signal; and

a fourth monitor connected to said first optical for monitoring an input probe optical strength level of at least one of the wavelengths of the wave division multiplexed optical signal.

20. (original) The system for controlling optical signal during transmission according to claim 14 further comprising:

a receiving unit connected to said second optical fiber at a predetermined distance from said amplifier for receiving the amplified wave division multiplexed optical signal as a transmitted wave division multiplexed optical signal;

a fifth monitor connected to said receiving unit for monitoring a transmitted total optical strength level of one of the ranges of the transmitted wave division multiplexed optical signal at the receiving unit; and

a sixth monitor connected to said receiving unit for monitoring a transmitted probe optical strength level of one of the wavelengths of the transmitted wave division multiplexed optical signal.

21. (original) The system for controlling optical signal during transmission according to claim 20 wherein said adjustment unit adjusts said amplifier based upon a combination of the total optical strength level, the probe optical strength level, the transmitted total optical strength level and the transmitted probe optical strength level.

22. (original) The system for controlling optical signal during transmission according to claim 21 wherein said adjustment unit adjusts based upon a sum of the total optical strength level of the amplified wave division multiplexed optical signal at said amplifier before transmission and the transmitted total optical strength level at said receiving unit after the transmission.

23. (original) The system for controlling optical signal during transmission according to claim 21 wherein said adjustment unit adjusts based upon a sum of the probe optical strength level of the amplified wave division multiplexed optical signal at said amplifier before transmission and transmitted probe optical strength level at said receiving unit after the transmission.

24. (original) The system for controlling optical signal during transmission according to claim 14 wherein said adjustment unit adjusts said amplifier with respect to an output level of the amplified wave division multiplexed optical signal.

25. (original) The system for controlling optical signal during transmission according to claim 14 wherein said adjustment unit adjusts said amplifier with respect to a gain tilt of the amplified wave division multiplexed optical signal.

26. (New) The method of controlling optical signal during transmission according to claim 1 wherein a number of wavelengths is counted.

27. (New) The method of controlling optical signal during transmission according to claim 1 wherein the selected one of the wavelengths in monitoring the probe optical strength level is the shortest one of the wavelengths.

28. (New) The method of controlling optical signal during transmission according to claim 1 wherein the selected one of the wavelengths in monitoring the probe optical strength level is the longest one of the wavelengths.

29. (New) The method of controlling optical signal during transmission according to claim 1 wherein a narrow band optical filter is used for the selected one of the wavelengths in monitoring the probe optical strength level.

30. (New) The method of controlling optical signal during transmission according to claim 1 wherein a pair of photodiodes and a narrow band optical filter are used for implementing the reduction of the gain tilt.

31. (New) The method of controlling optical signal during transmission according to claim 1 wherein said amplification is adjusted so that the average value and the probe optical strength level are substantially matched.

32. (New) The system for controlling optical signal during transmission according to claim 14 wherein said first monitor has information on a number of wavelengths.

33. (New) The system for controlling optical signal during transmission according to claim 14 wherein the selected one of the wavelengths in monitoring the probe optical strength level is the shortest one of the wavelengths.

34. (New) The system for controlling optical signal during transmission according to claim 14 wherein the selected one of the wavelengths in monitoring the probe optical strength level is the longest one of the wavelengths.

35. (New) The system for controlling optical signal during transmission according to claim 14 wherein a narrow band optical filter is used for the selected one of the wavelengths in monitoring the probe optical strength level.

36. (New) The system for controlling optical signal during transmission according to claim 14 wherein said adjustment unit and said second monitor further includes a pair of photodiodes and a narrow band optical filter for substantially reducing the gain tilt.

37. (New) The system for controlling optical signal during transmission according to claim 14 wherein said adjustment unit adjusts the amplification characteristic so that the average value and the probe optical strength level are substantially matched.